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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/692,043	10/20/2000	Hideyasu Ishibashi	Q61360	5309

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EXAMINER
CHEN, WENPENG

ART UNIT	PAPER NUMBER
2624	3

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/692,043	ISHIBASHI, HIDEYASU	
	Examiner	Art Unit	
	Wenpeng Chen	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 5-7* is/are rejected.

7)☒ Claim(s) *2 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2000* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Specification

1. The disclosure is objected to because of the following informalities.

-- The specification indicates in page 18 that an autocorrelation matrix T is determined. However, no details are given for the procedure how the matrix is generated. In the translated part of the Japanese reference by Minami, which is listed in IDS and cited in page 17 of the present specification, one example of determining an autocorrelation matrix is provided. The Applicant is required to disclose explicitly how the autocorrelation matrix T is determined in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Saghri et al. ("Practical Transform Coding of Multispectral Image," John A. Saghri et al, IEEE Signal Processing Magazine, January 1995, pages 32-43.)

For Claim 1, Saghri teaches a method of compressing a multispectral image composed of a plurality of spectral images of an object captured in a wavelength range divided into a plurality of bands, comprising the steps of:

-- segmenting said multispectral image into a plurality of tile images; (section "Compression System Overview", Left column, page 35 teaches that 512 by 1024 images are divided into 512 by 512 image sets. Left column, page 40 teaches dividing images into 64 x 64 and 32 x 32 blocks.)

-- performing principal component analysis on respective tile images to obtain for each tile image a principal component number of sets of principal component vectors and principal component images for the multispectral image; (sections "Compression System Overview" and "Spectral Decorrelation"; eigenvector and eigen images)

-- determining from said plurality of sets, for each tile image, an optimum principal component number of sets of optimum principal component vectors and corresponding optimum principal component images that optimally represent image information about the multispectral image; (page 39, especially the second method of coding eigen images; Some of the low-variance eigen images are not coded.)

-- expressing compressed image data for said multispectral image by means of at least said optimum principal component number of sets of optimum principal component images and optimum principal component vectors for each tile image. (Fig. 1 and section "Compression System Overview")

For Claim 5, Saghri further teaches the method according to claim 1, wherein an image size of said tile images in terms of pixel is expressed as a power notation of 2 in both a

longitudinal and a transverse direction. (Left column, page 35 teaches that 512 by 1024 images are divided into 512 by 512 image sets. Left column, page 40 teaches dividing images into 64 x 64 and 32 x 32 blocks.)

For Claim 6, Saghri further teaches the method according to claim 1, wherein said tile images all have an image size in terms of pixel. (sections "Compression System Overview" and "Spectral Decorrelation")

Saghri also teaches the system of Claim 7 that corresponds to Claim 1 as evident with the above cited sections and Fig. 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saghri as applied to Claim 1, and further in view of Keusen ("Multispectral Color System with an Encoding Format Compatible with the Conventional Tristimulus Model," Keusen, Journal of Image Science and Technology, Vol. 40, No. 6, Nov/Dec 1996, pages 510-515 cited in IDS Paper #2.)

Saghri teaches the parental Claim 1. However, Saghri does not teach that the optimum principal component number is determined based on colorimetric values in a color space.

Keusen teaches encoding multispectral data including data having colorimetric values in a color space. (page 513)

It is desirable to have high quality of color reproduction without the need of transporting or storing large amount of image data. Keusen teaches a method using multispectral data for producing high quality of color reproduction with some kind of coding. Saghri teaches a method of compressing multispectral data with spectral decorrelation and JPEG -- resulting a very efficient compression. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to combine the teachings of Keusen and Saghri to use Saghri's method to compress Keusen's data because the combination improves compression of the data for high-quality color reproduction.

Allowable Subject Matter

6. Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter.

The prior art fails to teach the method of Claim 2 which specifically comprises in combination those recited in Claim 1:

-- wherein *the compressed image data for said multispectral image are expressed* not only by said optimum principal component number of sets of said optimum principal component

images and said optimum principal component vectors but *also by tile image information having information about tile numbers of said tile images, a tile position and an image size of said tile images.*

The prior art fails to teach the method of Claim 4 which specifically comprises in combination those recited in Claim 1:

-- wherein said optimum principal component number is *a minimum principal component number at which an absolute value of difference* between image information about a composite image that is composed of selected number of sets of said principal component vectors and said principal component images and the image information about an original image that is composed based on said multispectral image *is below a specified value* or *an absolute value of variation* in error from said original image which is presented when said composite image is determined by *sequentially including in an order of contribution those principal component vectors which make greater contribution* to said multispectral image does *not exceed a predetermined value.*

Conclusion

7. The prior art made of record in form PTO-892 and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 703 306-2796. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703 308-7452. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications. TC 2600's customer service number is 703-306-0377.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Wenpeng Chen
Primary Examiner
Art Unit 2624

September 16, 2003